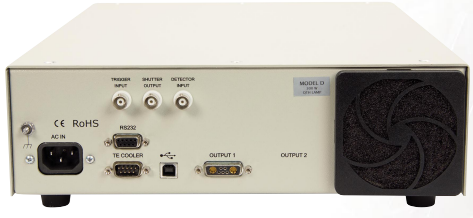
OPS-Q Series Power Supplies

The OPS-Q® model power supplies by Oriel are designed to meet the precise requirements for proper operation of Quartz Tungsten Halogen (QTH) lamps. These power supplies are capable of operating in constant power, constant current, and intensity modes to produce the high stability light output typically required for radiometric measurement, when used with the appropriate Oriel lamp, lamp housing, and if necessary, socket adapter.

USER INTERFACE

A power switch and all manually controllable features of the OPS model power supplies are accessible from the front panel. Four horizontal push buttons each activate a horizontal menu that allows for configuring of lamp operating mode, shutter, display mode, and setup with the help of a corresponding vertical menu that is activated as well. These functions are conveniently displayed and easily navigated by the LCD display on the front panel of the power supply.

- High stability power supply for 45-1000 W Quartz Tungsten Halogen lamps
- Capable of operating lamps in current, power, and intensity control modes
- Large LCD display for easy setup and monitoring
- RS-232 and USB interfaces located on rear panel for remote lamp operation and monitoring
- USB interface located on front panel for firmware updates
- Light intensity, shutter control, and timer features integrated
- Integrated temperature controller for TE cooled LIK-LMP light intensity controller kit
- RoHS and CE compliant



ORIEL® INSTRUMENTS
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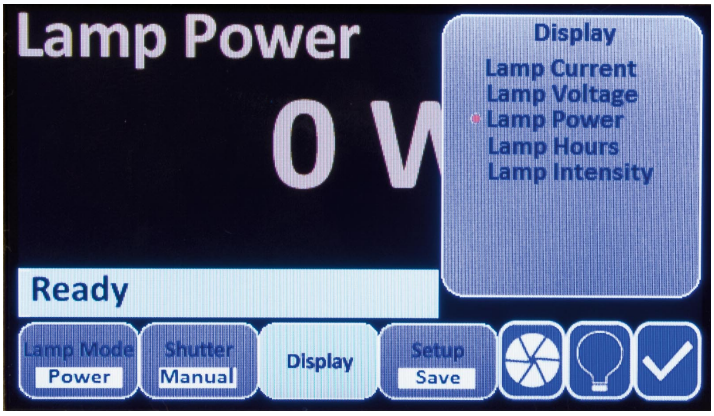


During operation the user has the ability to observe in real time the voltage, current, and power supplied to the lamp as well as how many hours the lamp has been operated and the output intensity of the lamp. Observing the output intensity of the lamp requires the use of the LIK-LMP Light Intensity Controller Kit, sold separately.

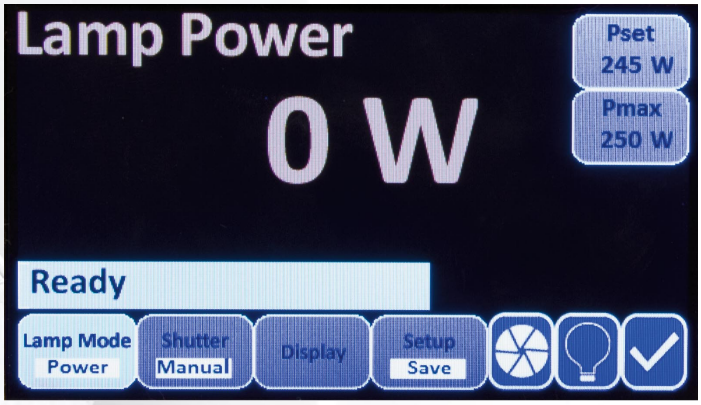
LAMP OPERATION MODES

The OPS model power supplies allow the lamp to be operated in power, current, and intensity control modes. As a default setting, the OPS-Q model power supplies are set to current mode.

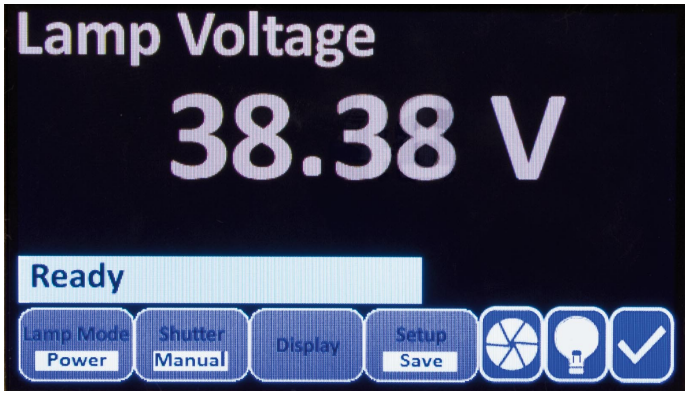
There is very little difference in the short term output stability when operating a QTH lamp in constant current or constant power mode. However, the differences appear as the lamp ages. Even with a stable power supply, deposits on the inside of the lamp envelope are visible as the lamp filament degrades, changing the electrical characteristics of the lamp.

Constant Power Mode

In power mode, the lamp is operated at a constant power setting. As the voltage cannot be changed, the current is raised or lowered to maintain the power at the same level. As the lamp ages, the radiant output decreases. As an IR emitter ages, its resistance may double. However, the lamp life is prolonged.



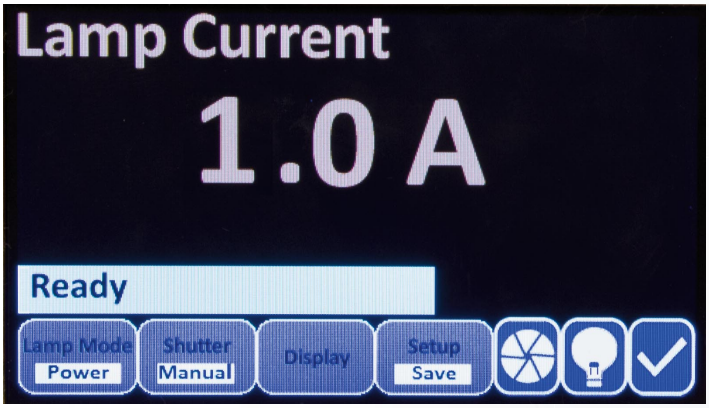
The light bulb icon on the OPS Power Supply's LCD screen illuminates, indicating the lamp is on. Real time power supplied to the lamp is also visible to the user during operation. Prior to igniting the lamp, a user can set the maximum operating power of the lamp and the operating power he or she would like to operate the lamp at. This prevents accidental damage to the lamp caused by supplying too much power.



The voltage, current, and power supplied can be displayed on the LCD screen of the OPS Power Supply while the lamp is being operated in any mode.

Constant Current Mode

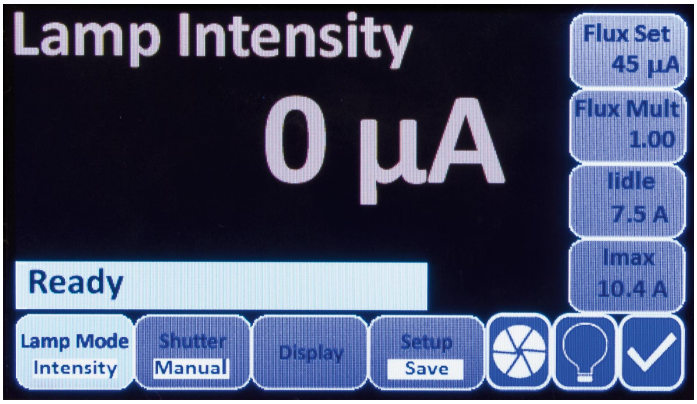
In current mode, the lamp is operated at a constant current setting. As the voltage cannot be changed, the power is raised or lowered to maintain the current at the same level. As the lamp ages, the power is increased. This results in greater optical output which to some extent may help compensate for a darkening lamp envelope. However, the lamp life is reduced due to the increase in power.

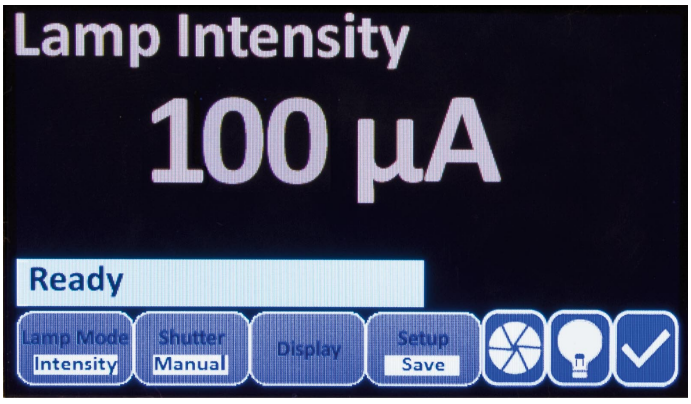


The current supplied to the lamp is visible in real time during operation on the OPS Power Supply's front panel LCD screen.

Intensity Mode

Lamp intensity mode allows the user to set a flux set point while the lamp is operating in current or power mode, with the help of the LIK-LMP light intensity controller kit. When a flux set point is established, the user can activate intensity control and adjust the power output of the lamp by a flux multiplier factor ranging from 0.01-999.99. Intensity control mode requires the use of the LIK-LMP light intensity controller kit. The LIK-LMP light intensity kit includes a TE cooled detector, and all the necessary adapters and cables for mechanical and electrical compatibility with the lamp housing (both 60000 Q Series and 10 - 1000 W Oriel Research Quartz Tungsten Halogen Lamp Housings adapters included) and OPS model power supply. When operating in intensity mode, the user has the ability to adjust the idle current and maximum current to be supplied to the lamp.

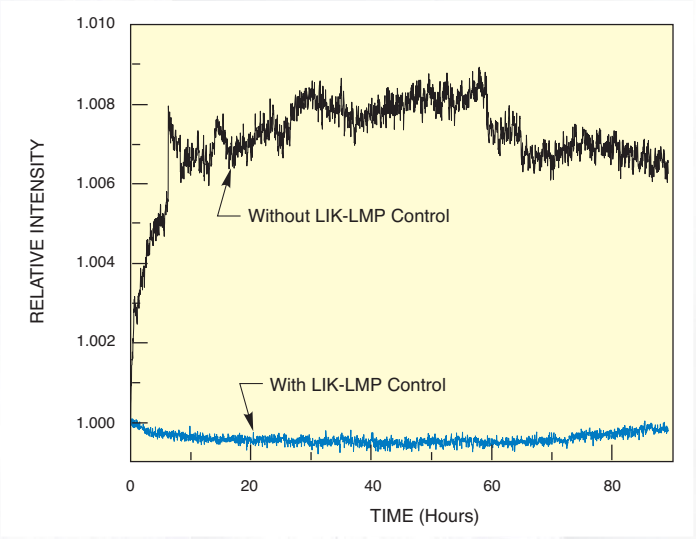




After a flux set point is established, the LCD screen of the OPS Power Supply allows the user to monitor in real time the output intensity of the lamp and increase or decrease this output intensity by a flux multiplier factor, with the help of the LIK-LMP (sold seperately).

When To Use A Light Intensity Controller

Although Oriel's power supplies are highly regulated, there are factors beyond the control of the power supply that may affect light output. Some of these are lamp aging, ambient temperature fluctuations and electrode erosion. For applications where high stability light output is especially critical, a LIK-LMP Light Intensity Controller Kit is suggested in order to compensate for such factors. It works in conjunction with the OPS Q Series power supplies to maintain a stable, long term output.



Intensity of a QTH lamp with and without LIK-LMP feedack.

LIK-LMP Light Intensity Controller Kit Contents

Part Number	Description
71582	TE Cooled detector head for LIK-LMP light intensity controller kit.
70062	Cable, Oriel Thermoelectric Cooler to TE Cooled Detectors, 6 Foot (1.8 Meter) Length
70018	Cable, BNC Low Noise, 6 Foot (1.8 Meter) Length
68952	Adapter Kit, Research Lamp Housing to Light Intensity Controller/Timer
68954	Adapter Kit, Q Series Lamp Housing to Light Intensity Controller/Timer

The housing of the LIK-LMP's TE cooled detector includes BNC and a four pin connectors for easy light intensity feedback and TE cooler control when used with an OPS Model Power Supply. The Research Lamp Housing shown in the picture is sold separately. Output connectors are also located on the back panel of the OPS Series Power Supplies to relay the LIK-LMP detector's feedback into light intensity data and control and monitor the detector's temperature. The detector's feedback alerts the Power Supply to make necessary changes in power/current to keep light intensity constant as the lamp ages.

EXTERNAL CONTROL

A USB and an RS232 connector are located on the back panel of the OPS-Q Series Power Supply. Either connector can be used to allow the user to operate the power supply from a Windows based PC. The User's Manual included with the power supply lists the necessary command set.

A USB connector is located on the front panel to install firmware updates to the power supply. Any firmware updates, if critical to the use and operation of the power supply will be available on the Newport website.

SHUTTER CONTROLLER

The shutter control feature of the OPS model power supply is useable in power, current, and intensity control modes. Any shutter which responds by opening or closing when receiving a TTL signal can be controlled by the OPS Power Supplies. This includes Oriel's model 71455 low-cost TTL shutter and the shutters designed into the Oriel solar simulators. A BNC connector is located on the rear panel of the power supply to output these TTL signals to the electronic shutter. The shutter can be manually opened or closed by pressing the SHUTTER button on the front panel of the power supply. RS232 or USB control of the shutter is possible as well.

Timed Exposure

Timed exposure control mode is accessible in power, current, and intensity operation modes. The exposure or open time of the shutter and number of repeat cycles is set by the user. Exposure times can be paused and resumed at will or reset to 0 in the middle of an exposure with the easy to use push buttons on the front panel.

Dosed Exposure

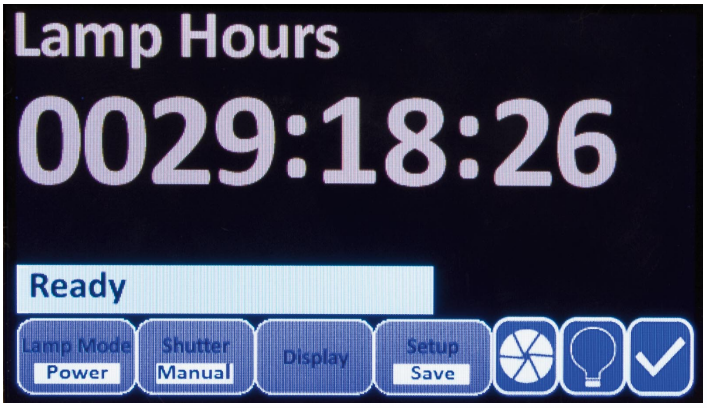
When light intensity control is enabled and simultaneously used with the shutter timer feature, the OPS power supply can be set to deliver a specified dose of light to a sample. The does is calculated as the total light flux multiplied by the time the shutter is open.

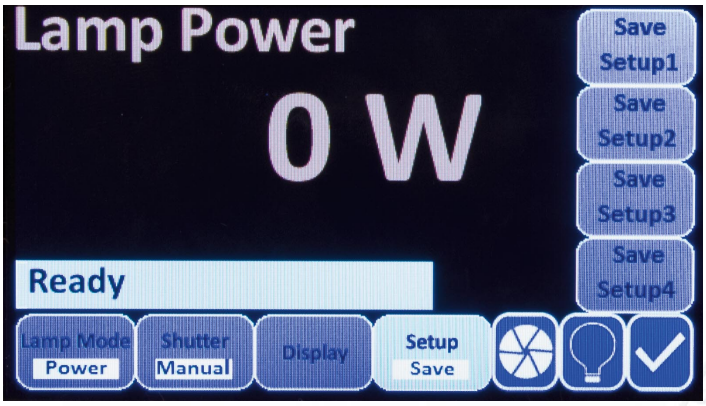
The dose feature is very similar to the internal shutter timer feature. But instead of specifying a shutter open time, the user specifies the desired dose. The shutter is left open for however long it takes to reach this dose and then closes. The user may set the close time and number of cycles for the sequence to repeat. Just as with the internal shutter timer feature, the user can pause, continue or abort an exposure whenever necessary.

CONFIGURATION SETTINGS

The OPS model power supplies are capable of storing up to four Setups. These Setups consist of lamp operation mode with relevant parameter limits (power, current, flux, etc.) and timing preferences for shutter and dosage control. This allows a user to easily recall previous testing parameters to create a repeatable setup.

The power supply is also capable of logging the hours of operation the lamp has been in use to allow the user to be aware of when the lamp's end of lifetime should be.





With 1 s resolution, the OPS Model Power Supply is capable of displaying how many hours the current lamp in operation has been operated for. The important parameters for as many as four Setups can be saved and recalled for fast and convenient test setup in the future.

QTH LAMP COMPATIBILITY

Newport Corporation offers all the components required to assemble a complete illumination system. The minimum components include a lamp, lamp housing, power supply, and possibly a socket adapter. The table below explains which components are compatible with each other to create an illumination system.

			Compatible Oriel Lamp Housings or Rod Mounts		
			Q Housing	Research Lamp Housings	
Power Supply	Lamp or IR Emitter	Lamp or IR Emitter Description	[Socket Adapter]	[Socket Adapter]	Rod Mount
OPS-Q250	63358	QTH 45 W (CALIBRATED)	N/A	N/A	63966
	63360	QTH 45 W (UNCALIBRATED)	N/A	N/A	63966
	6332	QTH 50 W (SHORT FILAMENT)	60000 Housing with 60090 Interface Kit [60043]	66881 66882 66883 66884 67009 67011 [60043]	N/A
	6337	QTH 50 W (LONG FILAMENT)	60000 Housing with 60090 Interface Kit [60043]	66881 66882 66883 66884 67009 67011 [60043]	N/A
	6333	QTH 100 W	60000 Housing with 60090 Interface Kit [60043]	66881 66882 66883 66884 67009 67011 [60043]	N/A
	6363	IR EMITTER 140 W	60000 Housing with 60090 Interface Kit [60041]	66881 66882 66883 66884 67009 67011 [60041]	N/A
	63355	QTH 200 W (CALIBRATED)	N/A	N/A	63966
	63368	QTH 200 W (UNCALIBRATED)	N/A	N/A	63966
	6334NS	QTH 250 W	N/A	66881 66882 66883 66884 67009 67011 [60043]	N/A
OPS-Q1000	6336	QTH 600 W	N/A	66885 66886 [6392NS]	N/A
	6315	QTH 1000 W	N/A	66885 66886 [6397]	N/A
	6317	QTH 1000 W (FEL)	N/A	66885 66886 [6392NS]	N/A
	63350	QTH 1000 W (CALIBRATED)	N/A	N/A	63965
	63362	QTH 1000 W (UNCALIBRATED)	N/A	N/A	63965

LAMP HOUSING CONNECTIONS

The following Lamp Housing Interconnection Cable(s) is required for use with the appropriate OPS-Q model power supply.

When using a rod mounted QTH lamp, the necessary cable is built into the assembly. Therefore, a replacement cable for this item is not sold.

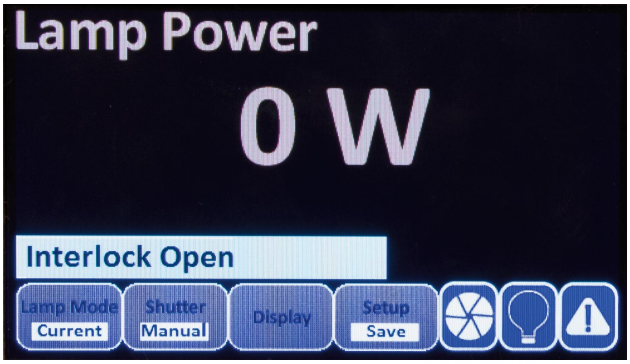
Model	Lamp Housing Interconnection Cable
OPS-Q250	Oriel model 70050 (6 ft. length), 70046 (12 ft. length), 70047 (20 ft. length)
OPS-Q1000	

The 70050 Lamp Housing Interconnection Cable offered by Newport Corporation

SOFT START PROTECTS LAMPS

These power supplies gradually apply power or current on lamp start-up and gradually reduce power or current on lamp shut-down. This prevents catastrophic damage from in-rush current on lamp start, and minimizes stress to the lamp. The reduction in thermal shock to calibrated lamps ensures longer validity of the calibration.

SAFETY INTERLOCK PREVENTS ACCIDENTAL EXPOSURE



The Interlock Open indicator of the power supply indicates a cable is disconnected, the lamp housing door is open, or a temperature problem has occurred.

Newport's Oriel Power Supplies have a safety interlock feature which must be satisfied before the power supply will power the lamp and if broken during operation, will disable the power supply. Overheating of the housing or accidental opening of the door will automatically shut down the power supply.

	OPS-Q250	**OPS-Q1000**
Approved Lamp Wattage	45 - 250 W	600 - 100 W
Power Factor	>0.99	
Input Voltage	90 - 264 VAC	95 - 264 VAC
Input Current Max	3 A	13 A
Input Frequency	47 - 63 Hz	
Output Current Range	1-10.5 A	2-10 A
Output Voltage Range	0 - 31 VDC	0 - 130 VDC
Line Regulation	0.01%	
Output Voltage Ripple	<0.05 % rms	
Light Ripple		
Meter Accuracy (% of full scale)	<0.05 %	
Digital Meter Resolution, Voltage	0.01 VDC	
Digital Meter Resolution, Power	1 W	
Digital Meter Resolution, Current	0.01 A	
Safety Interlock Voltage	12 VDC/GND	
Operating Mode	Constant Current, Power, or Intensity	
Operating Temperature	10 - 45 °C	
Max Relative Humidity	80%, non-condensing	

OPS-Q SERIES POWER SUPPLIES

QTH Lamp Specification Guide

Model	Wattage (W)	Lamp Voltage (V)	Effective Filament Size (mm)	Color Temperature	Permissible Burning Position	Average Life (h)
63358	45	6.8 V	4.75 H x 1.5 Dia.	****	0 or 90°	****
63360	45	6.8 V	4.75 H x 1.5 Dia.	****	0 or 90°	****
6332	50	12 V	1.6 x 3.3	3300	0 or 90°	50
6337	50	12 V	1.5 x 5.2	3000	0 or 90°	3000
6333	100	12 V	2.3 x 4.2	3300	0 or 90°	50
63355	200	30 V	7.0 H x 3.6 Dia.	****	0 or 90°	****
63368	200	30 V	7.0 H x 3.6 Dia.	****	0 or 90°	****
6334NS	250	24 V	7.0 x 3.5	3400	0 or 90°	50
63350	1000	120 V	6.0 x 16.0	3200	0 or 90°	****
6315	1000	120 V	6.0 x 16.0	3200	0 or 90°	300
63350	1000	120 V	6.0 x 16.0	3200	0 or 90°	****
63362	1000	120 V	6.0 x 16.0	3200	0 or 90°	****

****Refer to calibration certificate supplied with lamp.

Q Series Housing Socket Assemblies

Model	Description
60043	Socket Adapter, 50 to 250W QTH Lamps, For Q Series and Research Series Lamp Housings
60046	Socket Adapter, Q Series, Vertical, 50-100 W Quartz Tungsten Halogen Lamps

Rod Mount

Model	Description
63966	Lamp Mount, 45 to 200 W QTH Calibrated Source Lamps
63965	Lamp Mount, 1000 W Quartz Tungsten Halogen Calibrated Source Lamps

Q Series Housing

Model	Description
60000	Q Series Lamp Housing, Holds Adjustable Reflectors And Up to 4 Condensers

Research Lamp Housing Socket Assemblies

Model	Description
60043	Socket Adapter, 50 to 250W QTH Lamps, For Q Series and Research Series Lamp Housings
6392NS	Socket Adapter
6397	Socket Adapter, 1kW QTH, CE

Research Lamp Housings

Model	Description
66882	Research QTH Lamp Housing, 10-250W, F/1.5 Single Element FS,Collimated
66883	Research QTH Lamp Housing, 10-250W, F/0.7, 4 Element Aspherab, Collimated
66884	Research QTH Lamp Housing, 10-250W, F/1, 2 Element FS, Collimated
67009	Research QTH Lamp Housing, 10-250 W, F/2.2 FS Asphere, Collimated
67011	Research QTH Lamp Housing, 10-250 W, F/1 FS Asphere, Collimated
66885	Research QTH Lamp Housing, 600-1000W, F/1, 2 Element FS, Collimated
66886	Research QTH Lamp Housing, 600-1000W, F/.7, 4 Element Aspherab, Collimated

OPS-Q Series Ordering Table

Model	Description
OPS-Q250	45-250 W QTH Lamp Power Supply, Power, Current, and Intensity Control Modes, RS-232/USB control, CE and RoHS compliant
OPS-Q1000	600-1000 W QTH Lamp Power Supply, Power, Current, and Intensity Control Modes, RS-232/USB control, CE and RoHS compliant